09/919925
08/02/01

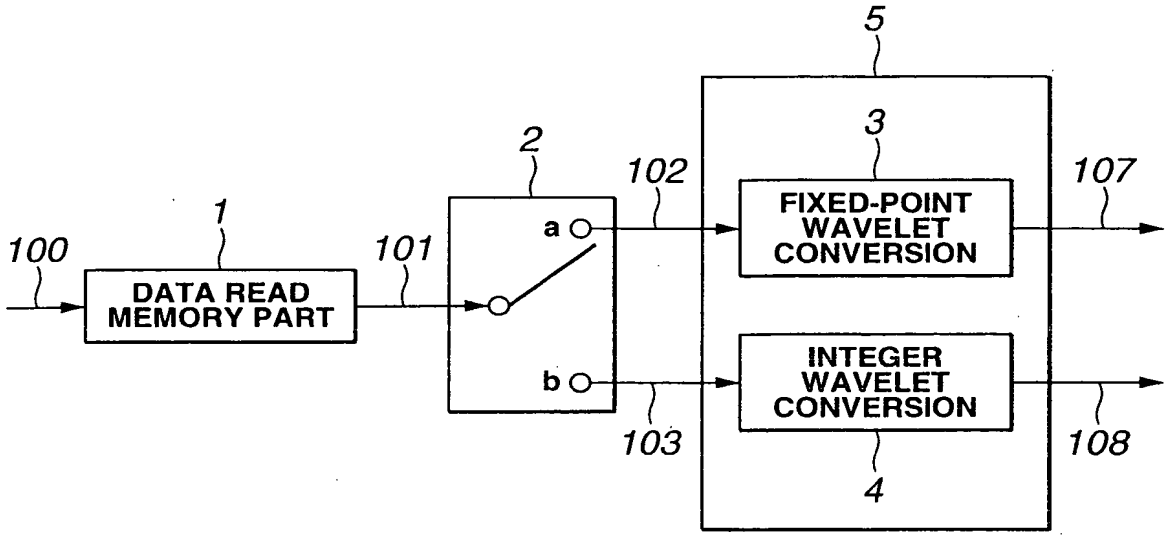


FIG.1

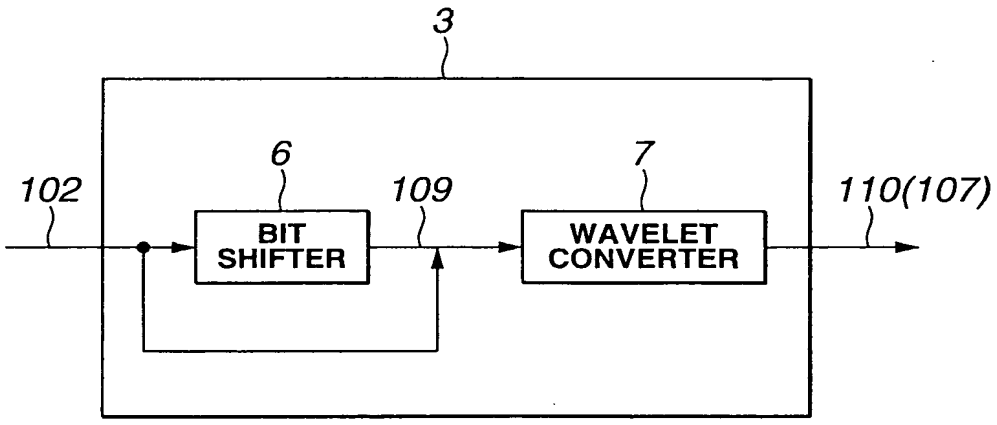


FIG.2

FIG.3A

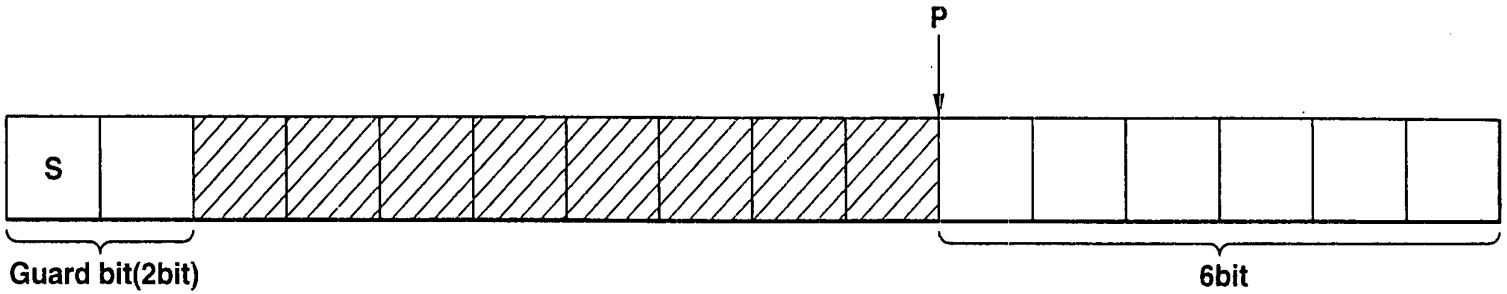
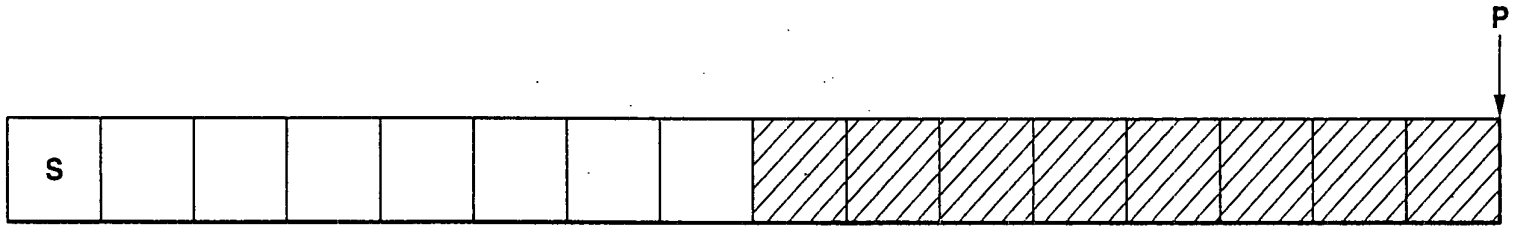


FIG.3B



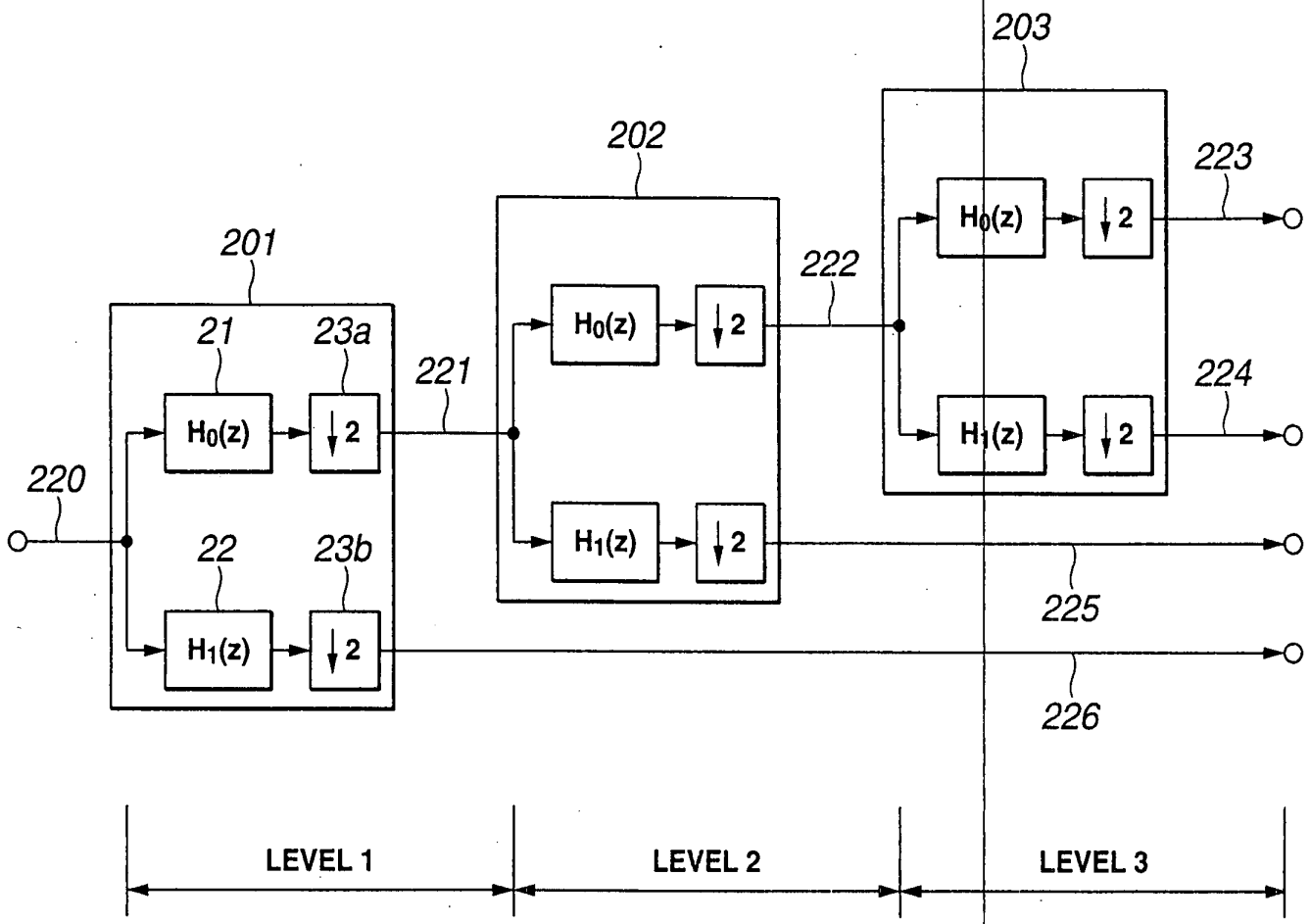

203
202
201
223
222
21
23a
221
224
220
22
23b
225
226
$H_0(z)$
$H_1(z)$
2
LEVEL 1
LEVEL 2
LEVEL 3

FIG.4

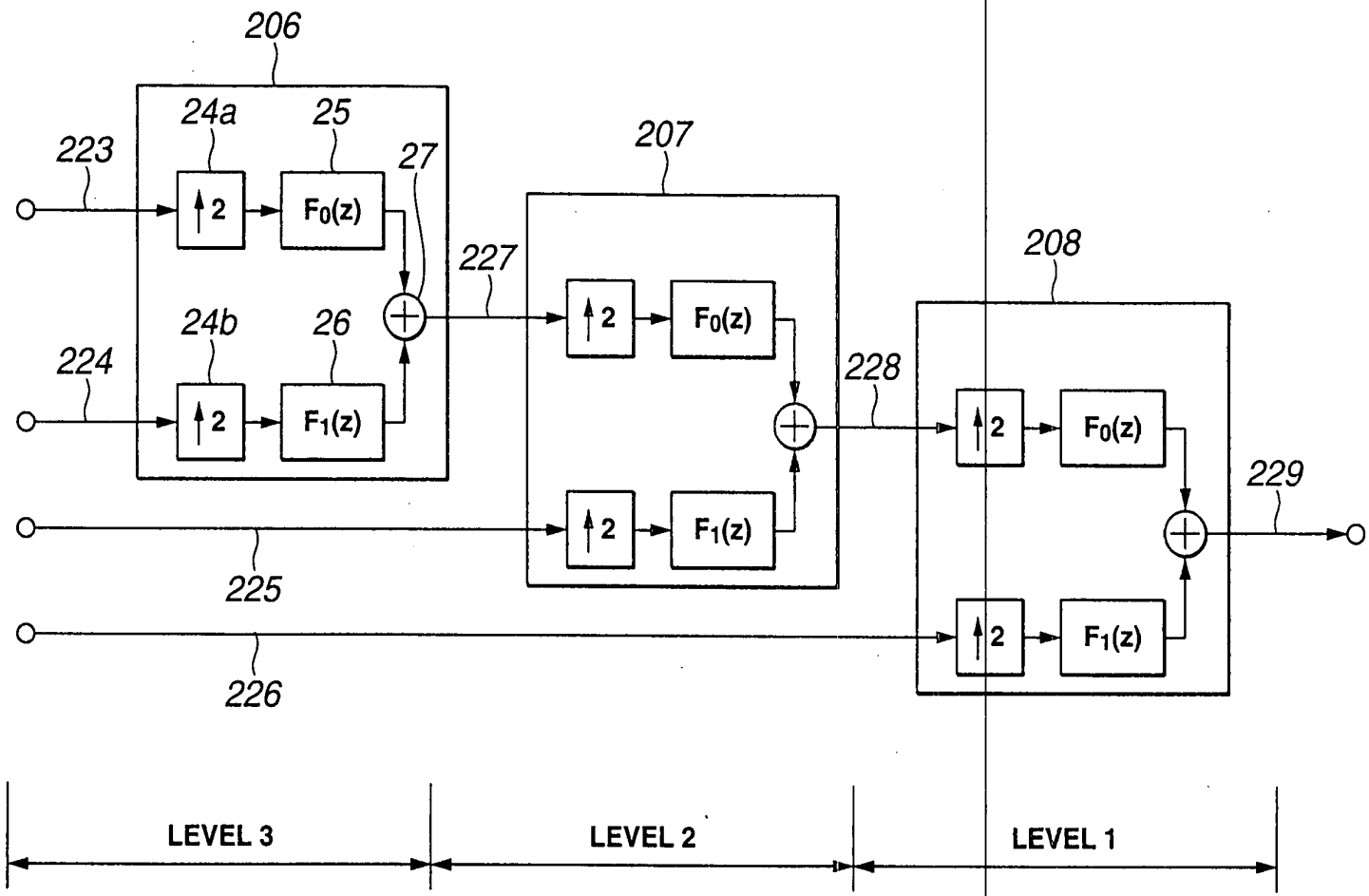

206
24a
25
27
223
2
F0(z)
207
227
208
24b
26
224
2
F1(z)
228
2
F0(z)
229
225
2
F1(z)
226
LEVEL 3
LEVEL 2
LEVEL 1

FIG.5

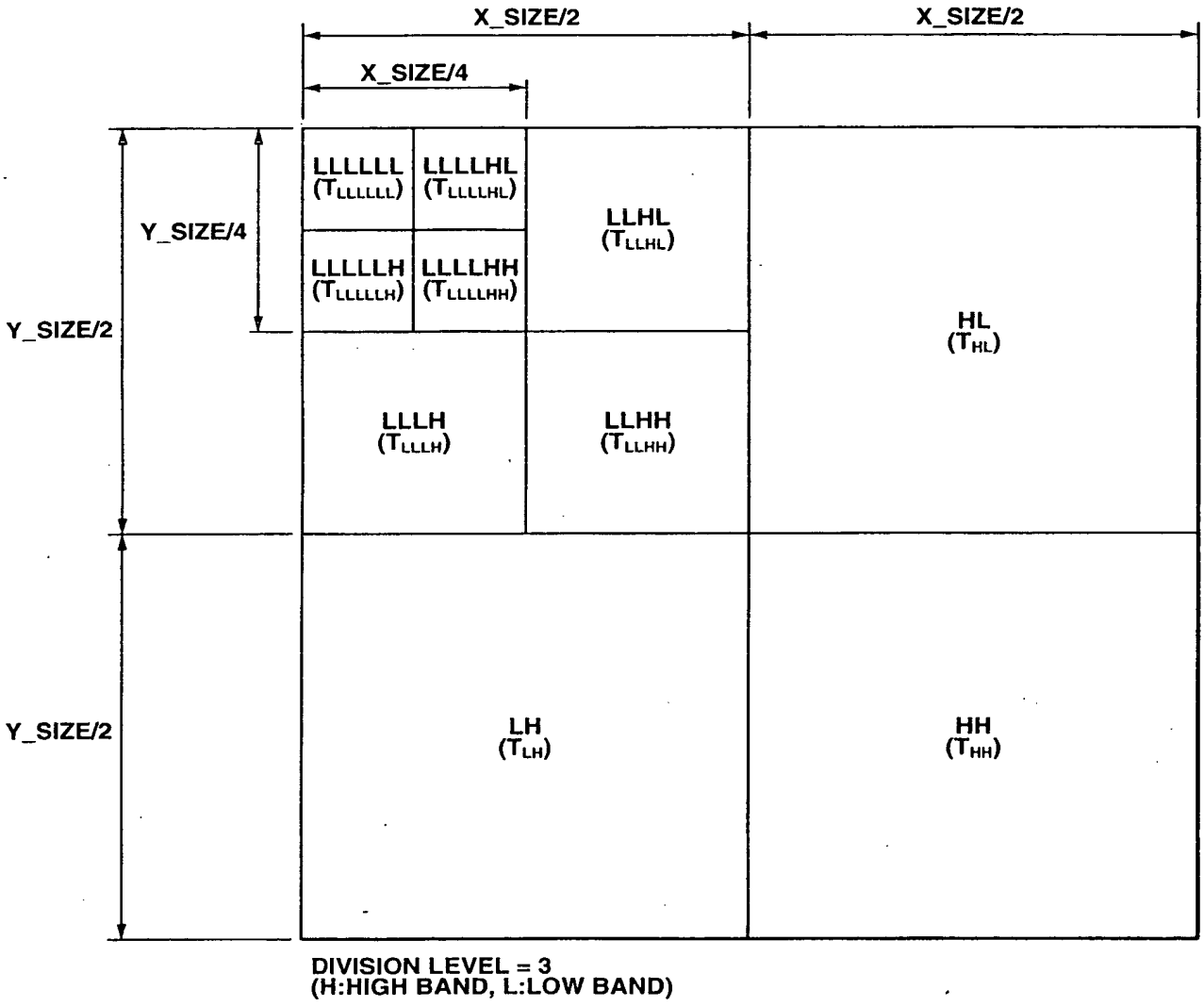

X_SIZE/2
X_SIZE/2
X_SIZE/4
Y_SIZE/4
Y_SIZE/2
Y_SIZE/2
LLLLLL
(T_LLLLLL)
LLLLHL
(T_LLLLHL)
LLLLLH
(T_LLLLLH)
LLLLHH
(T_LLLLHH)
LLHL
(T_LLHL)
HL
(T_HL)
LLLH
(T_LLLH)
LLHH
(T_LLHH)
LH
(T_LH)
HH
(T_HH)
DIVISION LEVEL = 3
(H:HIGH BAND, L:LOW BAND)

FIG.6

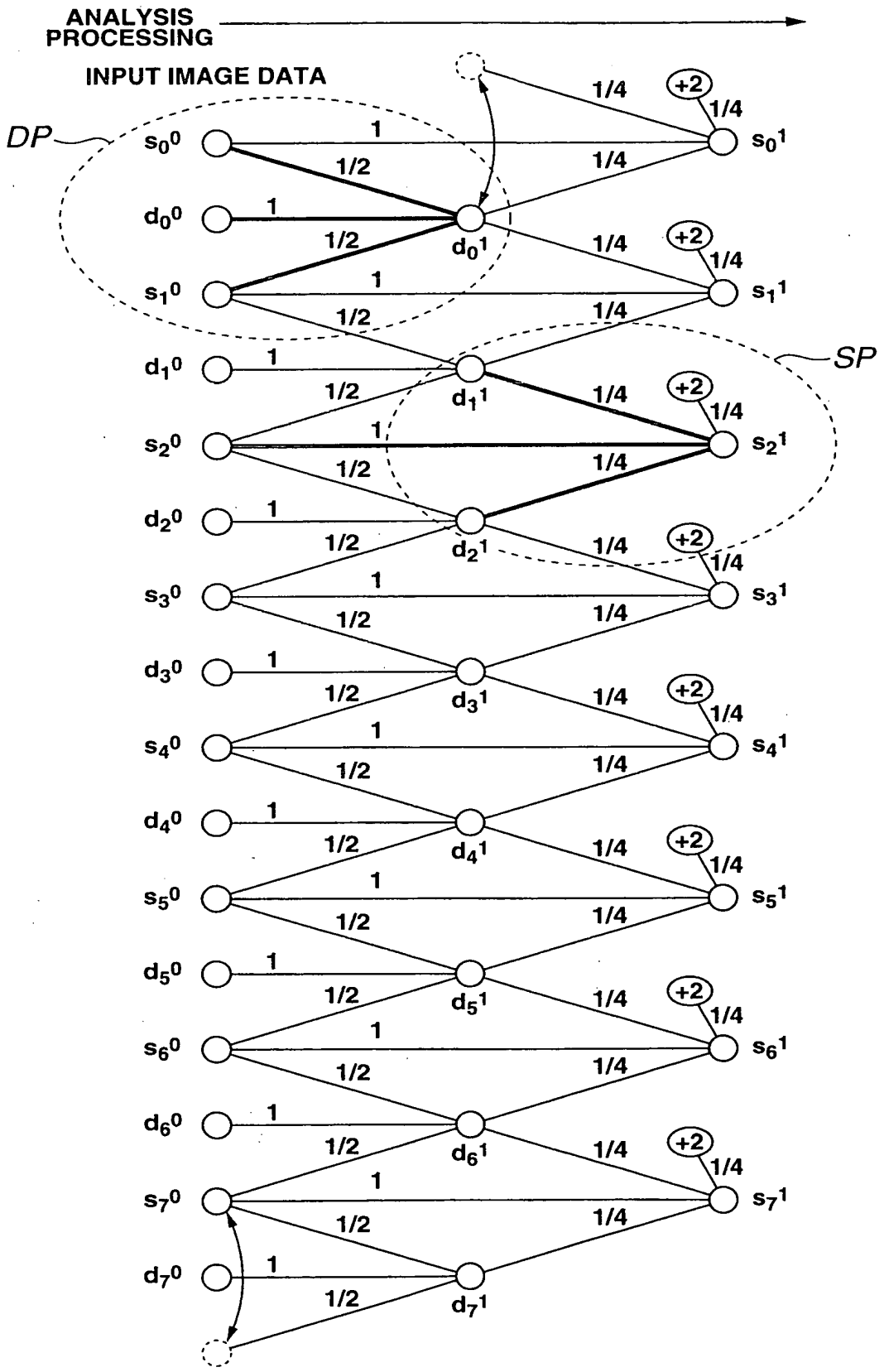

ANALYSIS PROCESSING
INPUT IMAGE DATA
DP
SP
s_0^0
d_0^0
s_1^0
d_1^0
s_2^0
d_2^0
s_3^0
d_3^0
s_4^0
d_4^0
s_5^0
d_5^0
s_6^0
d_6^0
s_7^0
d_7^0
d_0^1
d_1^1
d_2^1
d_3^1
d_4^1
d_5^1
d_6^1
d_7^1
s_0^1
s_1^1
s_2^1
s_3^1
s_4^1
s_5^1
s_6^1
s_7^1
1
1/2
1/4
+2

FIG.7

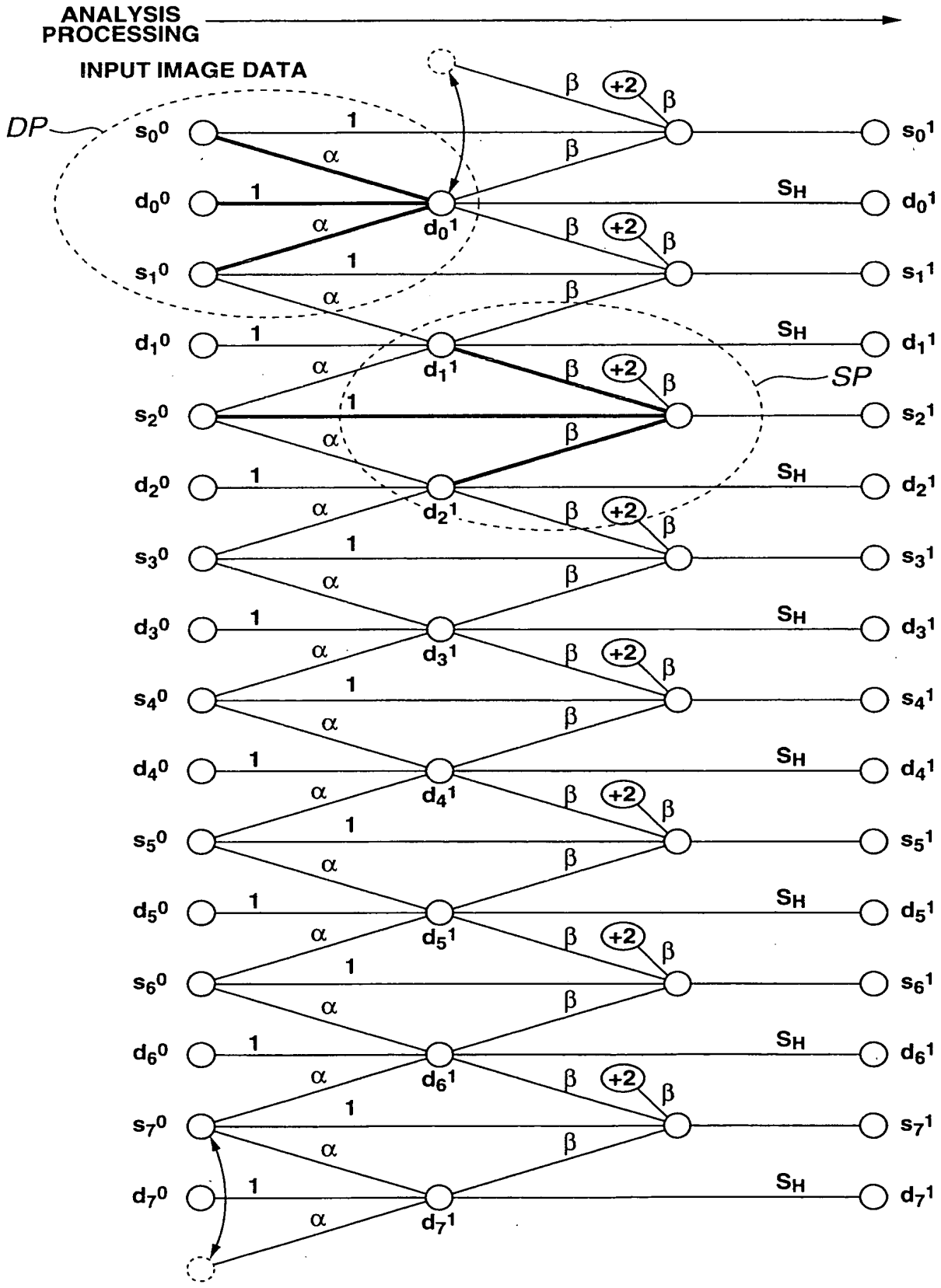

ANALYSIS PROCESSING
INPUT IMAGE DATA
DP
SP
SH
+2
α
β
1
s0⁰
d0⁰
s1⁰
d1⁰
s2⁰
d2⁰
s3⁰
d3⁰
s4⁰
d4⁰
s5⁰
d5⁰
s6⁰
d6⁰
s7⁰
d7⁰
d0¹
d1¹
d2¹
d3¹
d4¹
d5¹
d6¹
d7¹
s0¹
d0¹
s1¹
d1¹
s2¹
d2¹
s3¹
d3¹
s4¹
d4¹
s5¹
d5¹
s6¹
d6¹
s7¹
d7¹

FIG.8

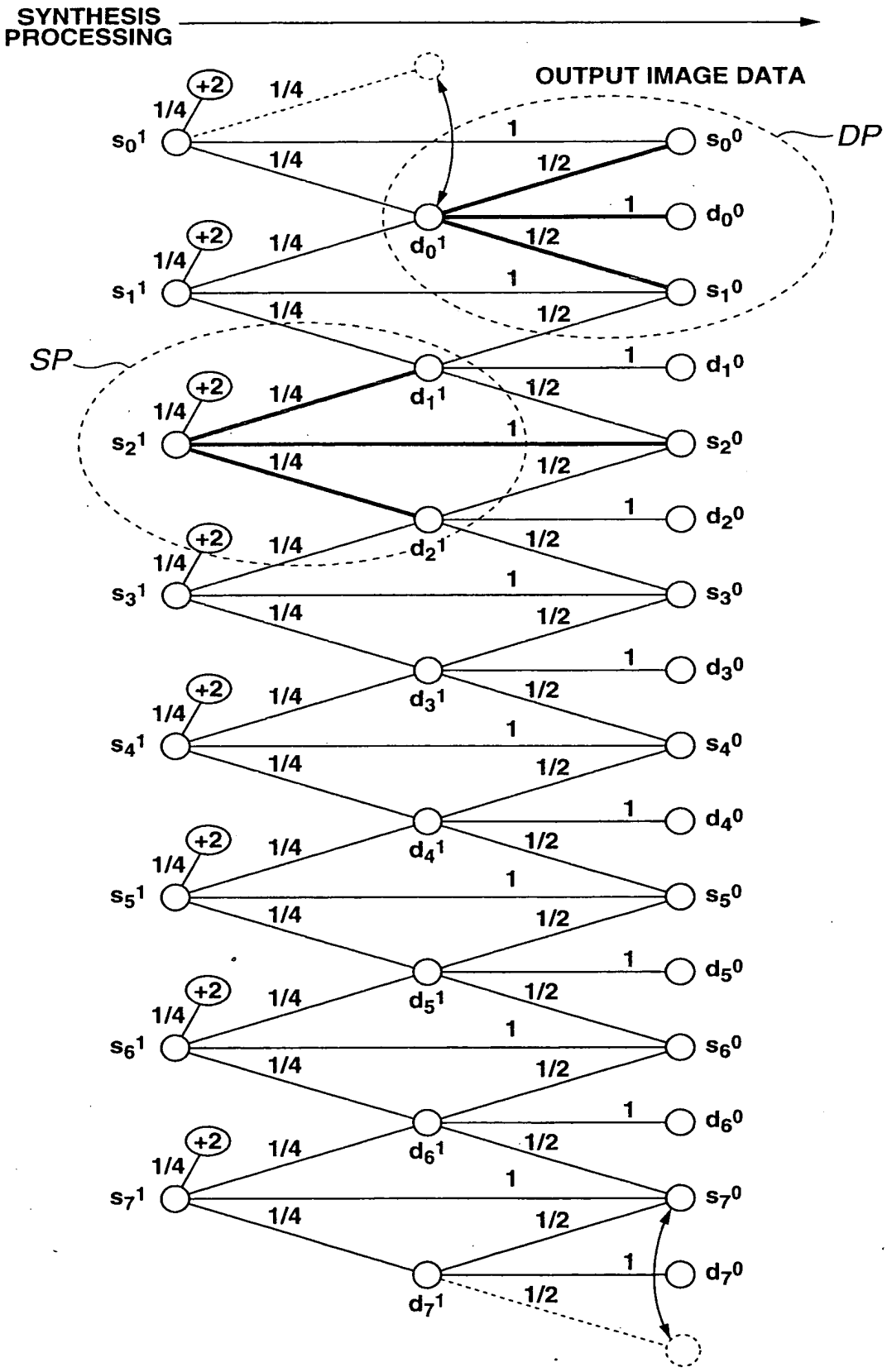

SYNTHESIS PROCESSING
OUTPUT IMAGE DATA
DP
SP
+2
1/4
1
1/2
s_0^1
s_1^1
s_2^1
s_3^1
s_4^1
s_5^1
s_6^1
s_7^1
d_0^1
d_1^1
d_2^1
d_3^1
d_4^1
d_5^1
d_6^1
d_7^1
s_0^0
s_1^0
s_2^0
s_3^0
s_4^0
s_5^0
s_6^0
s_7^0
d_0^0
d_1^0
d_2^0
d_3^0
d_4^0
d_5^0
d_6^0
d_7^0

FIG.9

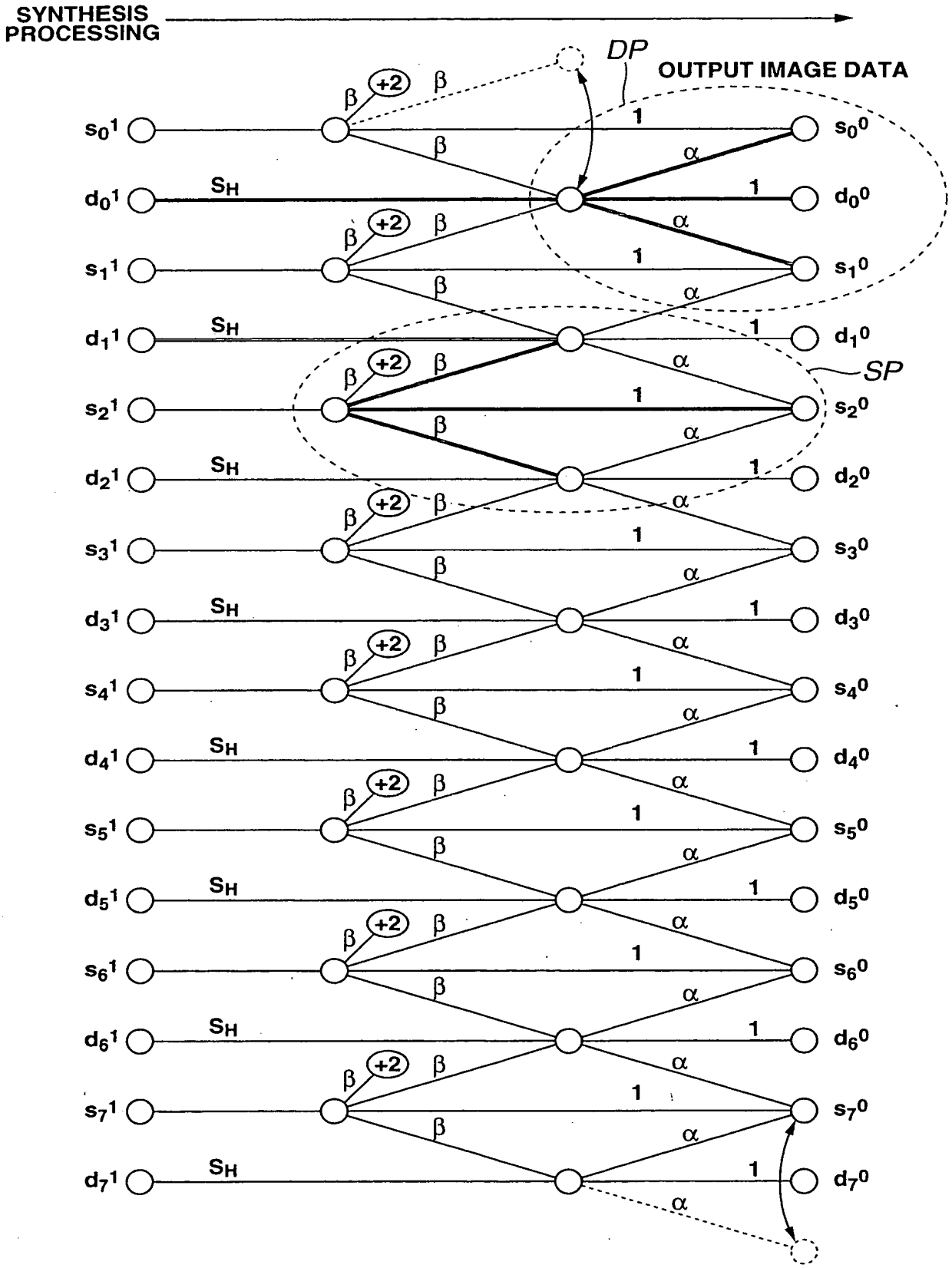

SYNTHESIS PROCESSING
DP
OUTPUT IMAGE DATA
SP
+2
β
α
1
SH
s0 1
d0 1
s1 1
d1 1
s2 1
d2 1
s3 1
d3 1
s4 1
d4 1
s5 1
d5 1
s6 1
d6 1
s7 1
d7 1
s0 0
d0 0
s1 0
d1 0
s2 0
d2 0
s3 0
d3 0
s4 0
d4 0
s5 0
d5 0
s6 0
d6 0
s7 0
d7 0

FIG.10

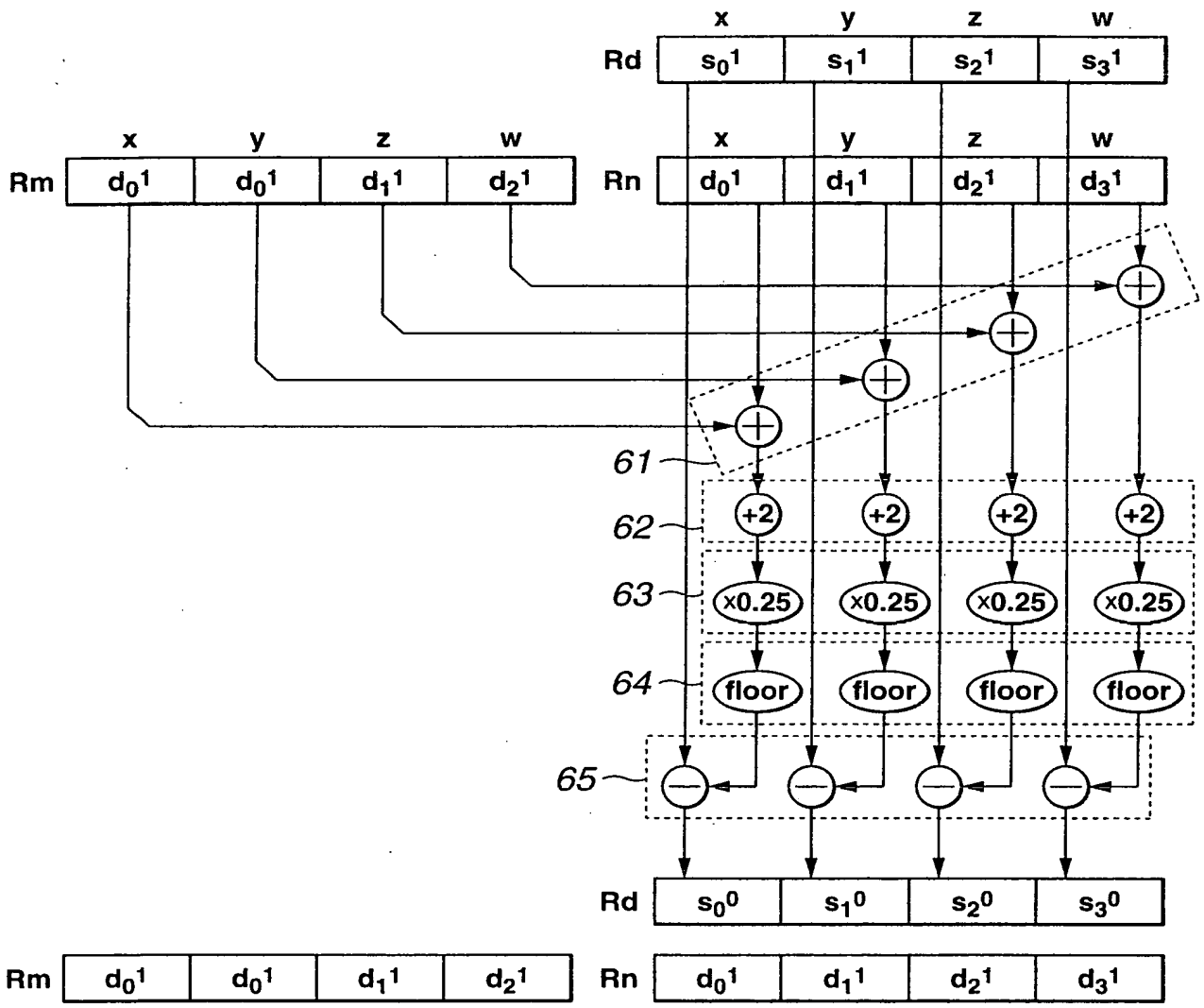

x
y
z
w
Rd
s_0^1
s_1^1
s_2^1
s_3^1
Rm
d_0^1
d_0^1
d_1^1
d_2^1
Rn
d_0^1
d_1^1
d_2^1
d_3^1
61
62
+2
63
x0.25
64
floor
65
s_0^0
s_1^0
s_2^0
s_3^0

FIG.11

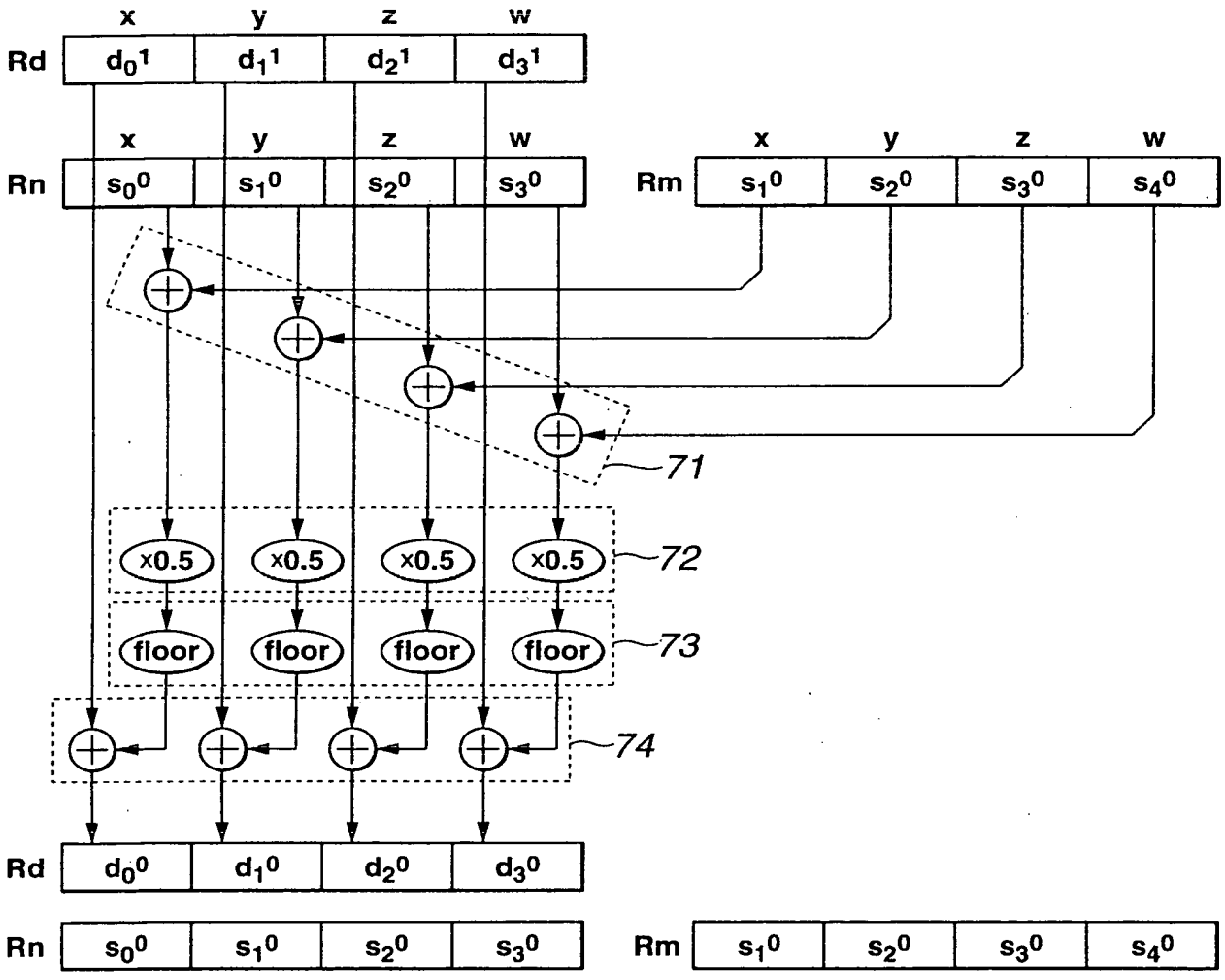

x
y
z
w
Rd
d_0^1
d_1^1
d_2^1
d_3^1
Rn
s_0^0
s_1^0
s_2^0
s_3^0
Rm
s_1^0
s_2^0
s_3^0
s_4^0
71
x0.5
72
floor
73
74
d_0^0
d_1^0
d_2^0
d_3^0

FIG.12

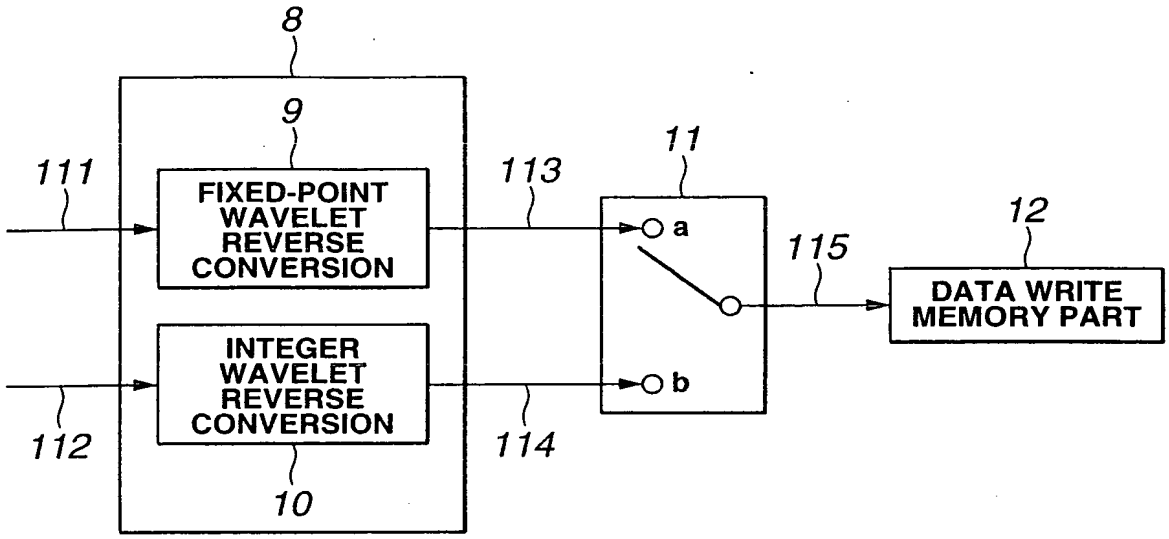

8
9
111
FIXED-POINT WAVELET REVERSE CONVERSION
113
11
a
115
12
DATA WRITE MEMORY PART
INTEGER WAVELET REVERSE CONVERSION
b
112
114
10

FIG.13

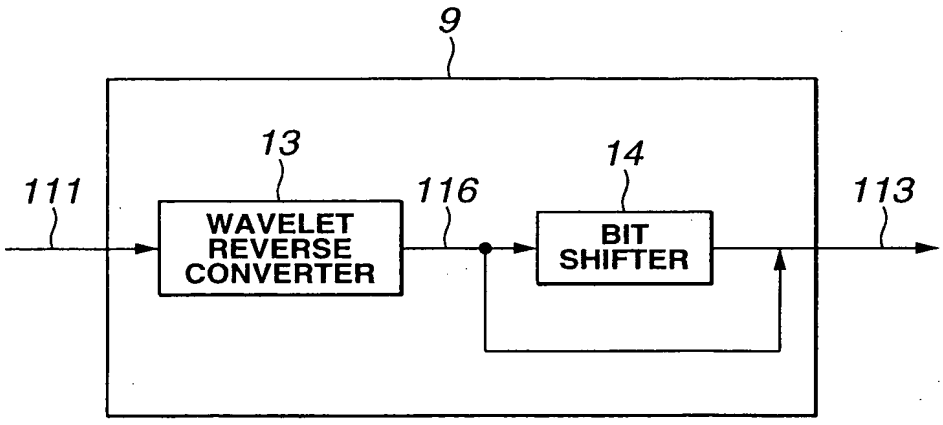

9
13
14
111
116
113
WAVELET REVERSE CONVERTER
BIT SHIFTER

FIG.14

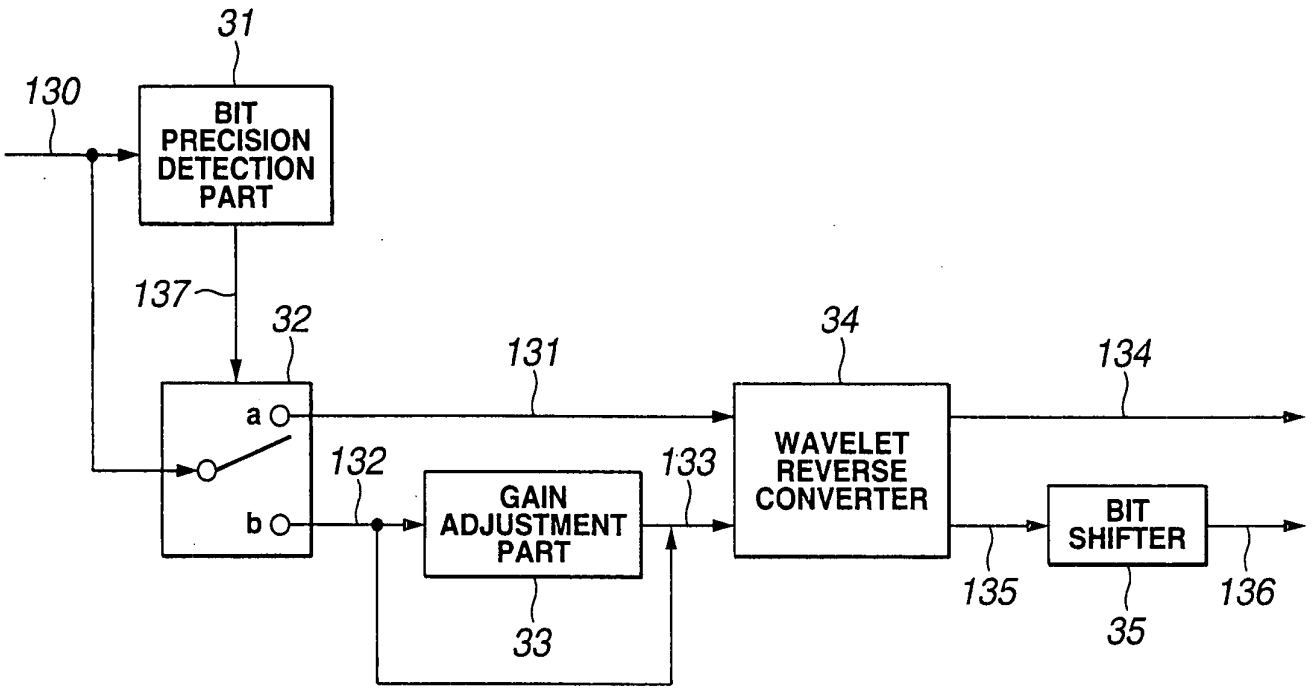

31
130
BIT PRECISION DETECTION PART
137
32
131
34
134
a
b
132
GAIN ADJUSTMENT PART
133
WAVELET REVERSE CONVERTER
BIT SHIFTER
135
136
33
35

FIG.15

Value (bits) MSB LSB	Transform type
0000 0000	9-7 irreversible wavelet transform
0000 0001	5-3 reversible wavelet transform
0000 0010	5-3 irreversible wavelet transform
	All other values reserved.

FIG.16